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ABSTRACT

Presented for diagnosticians and referral agents is an overview of four major types of diagnostic procedures utilized in the assessment of mental retardation: differential, etiological, diagnostic-remedial, and behavioral-task analysis. The rationale, definition, method, assets, and limitations of each method are discussed and are summarized in chart form. The chart also includes information on the tools, referral procedures, time and cost, and training needed for each method. (LS)

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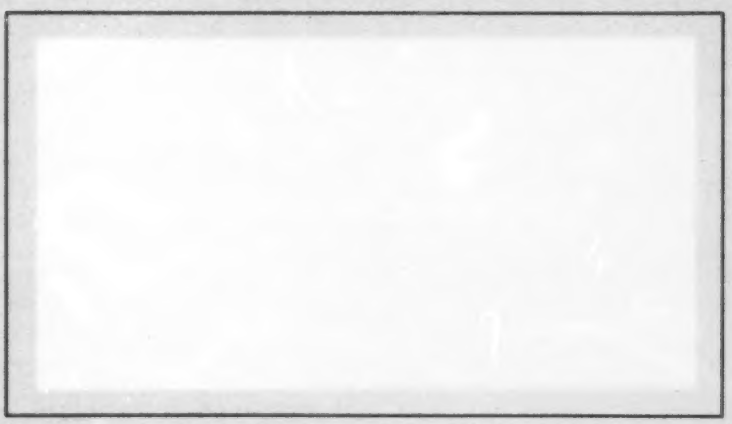

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WORKING PAPER NO. 27

EDUCATIONAL RELEVANCE & DIAGNOSIS OF THE MENTALLY RETARDED

Ted Alper
April, 1969

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Educational Relevance and Diagnosis of the Mentally Retarded

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The purpose of this paper was to present an overview of the major types of diagnostic procedures utilized in the assessment of mental retardation. The rationale, definition, method, assets and limitations of each method are discussed. The information is presented in such a way that both the diagnostician and the referral agents should be able to utilize the material in order to make future requests for diagnosis yield more useful information.

REFERRAL

When considering diagnosis, the importance of the referral question must be stressed. This question, if stated properly, should lead the doctor or psychologist to ascertain the proper information. In many cases, a referral is stated in a very loose form and indicates no direction for the diagnostician. Asking a psychologist or doctor simply to "diagnose" a child forces the diagnostician to use a standard battery of tests that may or may not provide information relevant to the problem. More appropriate questions might ask if the child is mentally retarded, if he has brain damage, or what can be done educationally to assist the child. In each case a different diagnostic source is indicated. [Brain damage can only be diagnosed by a neurologist. Sending the child for an I.Q. test will not do the job.]

When a referral is made, it is important to include all the information which originally indicated that a problem existed. A one or two word description is not sufficient. Useful information can only result when the referral agent includes prior knowledge of the suspected problem. In this way he might eliminate the possibility of receiving a rehash of what is already known.

By reading through these different assessment procedures, one should be able to more accurately choose the kind of diagnosis appropriate for the client. Then he can refer to the proper resource person and ask the diagnostician the kind of questions he will be able to answer.

DIAGNOSIS

Differential Diagnosis:

English and English (1958) define diagnosis as the "identification of disease of abnormality from symptoms presented from a study of its origins and course," or "any classification of an individual on the basis of observed characteristics" (1958, p. 150). The purpose of a differential diagnosis is determination of whether or not individuals belong in the broad class of the mentally retarded.

In the case of diagnosis of the mentally retarded, the current definition is the basis of any differential diagnostic procedure. At present the AAMD (1961) definition is the accepted one in this area: "Mental Retardation refers to subaverage intellectual functioning originating during the developmental period and is associated with impairment in adaptive behavior" (p. 3).

The multiple criterion indicated by this concept make certain limitations upon a differential diagnosis. The individual must be below the cutoffs stated, -1 standard deviation below the mean, on both tests of intelligence and adaptive behavior. The developmental period is limited to sixteen years of age, which leaves out individuals who suffer injury after that period of time and who otherwise would meet the criterion.

The advantages of this concept for diagnosis are based on three points: a causal agent or prognosis is not indicated, both I.Q. and adaptive behavior must be used, and a -1 standard deviation criterion point is set up as standard. Diagnostic classifications such as pseudo-feeblemindedness with its attendant limitations are now precluded by this concept of retardation (Benton, 1964). An individual can be diagnosed as retarded at one time in his life, and later can be found not to fit into that classification. Considering the advances made in education and rehabilitation, a concept that includes incurability is inappropriate.

The limitations of this diagnostic procedure are mainly based upon the lack of acceptable criteria to judge adaptive behavior at the present time. Instruments of this nature have been developed, i.e., Vineland Social Maturity Scale, but are believed by many to assess this variable inadequately. Research is presently being carried on at such institutions as the Parsons State Hospital (Winira, 1966) to develop such tests of this area for the future.

Etiological Diagnosis:

Etiological diagnosis is part of the process of further classification of the mentally retarded individual. Whether or not an individual fits the broad classification of mentally retarded has been determined through differential diagnosis. The main emphasis in etiological diagnosis is determining why an individual is retarded. This, supposedly, allows one to subgroup the individual into a more homogeneous class which implies the direction treatment should take.

Etiological diagnosis is based on the medical model. This approach indicates that once the sickness (mental retardation) has been diagnosed through looking at the nosology of symptoms (psychological and medical), the cause of the problem can be determined.

The AAMD manual (1959) includes a section dealing with the medical classification of mental deficiency. These classifications are broken down into the following: "diseases and symptoms due to infection; intoxication; trauma or physical agent; disorder of metabolism, growth or nutrition; new growths; (unknown) prenatal influences; unknown or uncertain cause with structural reaction manifest; and uncertain (or presumed psychologic) cause with functional reaction alone manifest" (Benton, 1967, p. 8). Supplementary classifications which further define the causal agent are also included: "with genetic component; secondary cranial anomaly; impairment in special senses; convulsive disorder; psychiatric; and motor dysfunction" (Benton, 1967, p. 8). Robinson and Robinson (1965) listed three primary groups of causative agents: genetic, physical environment, and the psychological environment.

Individuals may also be placed in terms of symptom groupings such as cultural-familial, emotionally disturbed, and brain injured.

Causative agents may also be classified as endogenous or exogenous. This is done by considering family history, history of injury to the brain, and neurological diagnosis. If there are no neurological signs and there is a family history of retardation, the causative agent is seen as being endogenous. In the case of a positive neurological examination and history of injury to the brain, the classification would be exogenous.

The facilities for procuring this type of diagnosis are usually found in the hospital setting. In Los Angeles, centers such as Children's Hospital and the Southern California School for Cerebral Palsied Children provide the extensive services where both medical and non-medical data are necessary.

Information gleaned from such a diagnosis might include medical recommendations for drugs, prostratus, diet, physiotherapy, psychotherapy and special educational procedures. This type of diagnostic procedure is usually an expensive one, and, to the author's knowledge, was only carried out in a very small percentage of cases. Most school-discovered cases are relatively high grade retardation (I.Q. 50 and above) and specific medical causation or recommendations are lacking for a majority of such cases. Since the percentage of high grade retardation is 85%, the necessity for this type of diagnostic procedure is minimal.

Another limitation of this type of diagnostic procedure for the school personnel is that it often leaves the same questions unanswered. A determination of cause does not lead to educational recommendations

in the majority of cases. According to most of the findings in the area of behavior modification, the symptoms of retardation may be treated without knowing the causes of that behavior.

Diagnostic Remedial Diagnosis:

The basic philosophy of this approach is to use psychological tests to indicate the specific abilities and disabilities that underlie the observed behavioral deficits. It differs from a purely etiological approach in that specific educational recommendations are made, based on the test results, to improve the child's functioning in those disability areas.

Most work with the diagnostic remedial approach to diagnosis was focused on the child with specific learning disabilities. One approach taken is to look at the scatter of subtest scores which will indicate certain areas of strengths and weaknesses. This is a means by which the psychologist can pinpoint problem areas and develop relevant suggestions for education.

Bateman (1964) presented an overview of the diagnostic remedial approach to working with individuals. The diagnostic process included: assessment of expected functioning level on all tests; a detailed behavioral description of the problem; determination of the psychological correlates of the disability; and hypothesis as to proper remedial approaches.

The psychologist's role is to assess both the manner and level of performance in different areas. Instead of using broad labels, pinpointing of specific disabilities is stressed. When behavioral deficits

have been determined, diagnostic hypotheses regarding the underlying psychological correlates of the disabilities are made. The diagnostic procedure is seen as a "successive narrowing of disability examined until exact problems are pinpointed" (Bateman, 1964, p. 172).

Remediation begins with specific work in the areas of psychological disabilities. One type of training is that developed by Frostig and Horne (1964), in which the focus is on defects in the area of visual perception. The next stage includes broadening of the remediation to include disability areas related to the primary ones. In the last two stages, work in the areas that are more related to regular classroom activities such as reading and spelling are indicated.

Frostig's (1965) work in this area was a prime example of the application of the diagnostic remedial diagnosis. She used the term "developmental lags" to describe the specific disabilities found in higher grade retardates. Her assessment battery included: Wepman Test of Auditory Discrimination, Frostig Test of Developmental Perception, Weschler Intelligence Scale for Children, and the Illinois Test of Psycholinguistic Abilities.

Evaluation of the child was made using these four tests plus personality evaluations, developmental histories, and sensory-motor testing. Frostig believed that an etiological diagnosis was necessary in order to indicate the possibility of medical problems such as seizures. The psychological diagnosis, however, was used to determine in what areas a child needed training.

In order to implement the information derived, the psychologist or teacher must look at the specific disabilities and determine proper

remedial procedures to train the student. Frostig stressed implementation of this training with the regular academic activities. For example, a lesson in math might be integrated with training in vocal recording, visual motor sequencing, position in space, and spatial relations.

One limitation of this approach is the lack of research relating the training in the specific psychological deficit areas and academic achievement. In the author's own work at the Frostig School he observed children making gains through the careful use of this technique, but experiments validating its effectiveness have not been completed. Another limitation is the lack of teachers able to translate the information into useful training procedures. Programs in the public schools (Gardena, California, 1967) were implemented, but only after a good deal of training had been completed. The author has also tried to implement this testing program, but was unable to find teachers willing to spend the time necessary to become sophisticated enough to utilize the information.

Behavioral Diagnosis:

The emphasis in behavioral diagnosis is upon observation of the child's behavior. The use of standardized tests is not emphasized and concepts like I.Q., S.Q., and Language Age are not considered relevant.

As was stated previously, the diagnostic process cannot be separated from the basic concept of mental retardation. In this case, Bijou's (1966, 1968) definition serves as the basic rationale for the behavioral-task analysis diagnosis. This definition states that the "retarded individual is one who has a limited repertoire of behavior

shaped by events that constitute his history" (1966, p. 2). According to Bijou's view (1966), retardation may be due to the following causes:

1. Abnormal Anatomical Structures or Physiological Functioning
2. Inadequate Reinforcement and Discrimination Histories
3. Contingent Aversive Stimulation
4. Reinforcement of Aversive Behavior

Causation, however, is not stressed since evaluation of the current behavioral assets and liabilities through a functional analysis is the preferred technique.

The two techniques covered are part of an overall view of diagnosis that ties it more closely with remediation than with classification. Through the use of such systems one is not interested in the labelling of individuals, but in what can be done to overcome the deficits that cause them to be viewed as retarded.

Task Analysis: The term "task analysis" was derived from the terminology of operant learning theory. Any complex task can be broken down into its component parts, and these parts can be ordered into a sequence that will promote optimum learning.

Gagne (1966) presented a conceptualization of learning which was divided into eight levels. These ranged from what he termed "signal learning" (Pavlovian Conditioned Response) to "problem solving." Each higher level of learning was built upon work at the lower levels. For example, before "principle learning" (level 7),

the individual must have gone through "concept learning" (level 6). This theoretical view gave a basis for the task analysis position.

Valett (1967) had developed a task analysis of skills necessary at the pre-school level. He divided the task ladders into seven sub-headings which included "motor integration, tactile discrimination, auditory discrimination, visual discrimination, language development, verbal fluency, and conceptual development" (1967). Each ladder was ordered in terms of tasks from simple to complex. In working with a child, the tasks he already knew and the ones he was deficient in were determined. No overall score was derived; instead, tasks that could be translated into effective remedial procedures were the outcomes.

Bereiter and Engelmann (1965) derived a task analysis view of working with culturally deprived children. As a large number of children who are diagnosed as higher grade retardates are culturally deprived, this approach was included. They ruled out previous systems that had emphasized giving the culturally deprived child the experiences of the middle class child in order to remediate his problems. They believed that there were certain academic skills in pre-reading, arithmetic, conceptual thinking, and language that were lacking in the repertoire of this child, which must be specifically taught prior to school entrance. Their lesson plans were ordered into task ladders that worked toward overall behavioral goals. Research which compared the effectiveness of this program with other more standard ones yielded extremely favorable results.

Both of these approaches are good examples of the task analysis viewpoint which fit in well with the behavioral assessment techniques. Instead of looking for the causes and blaming lack of achievement on them, task analysis emphasizes careful teaching in a step by step manner. This equates with the behavioral techniques of shaping up of complex behaviors using successive approximations of the final goal.

Behavioral: The following approaches emphasized not only the tasks of learning involved, but also the proper environmental manipulations that could be made to facilitate learning.

Lindsley's (1964) article dealing with the retarded was a prime example of the application of behavioral diagnosis to the retarded. In this article he developed a language system called the Common Language Analysis of Behavior, termed COLAB. Through the use of this system, direct measurement of behavior was emphasized and a description of the environmental conditions of the learning task was promoted.

In order to remediate the behavioral deficits evidenced by the retarded, the emphasis was on determining what are the specific responses the individual can make and what consequences will increase the rate of those responses. The language included two stages, one of which was a description of what possible results would occur if certain changes were made. This was followed by an intervention stage in which the effects of the changes were measured. Once a functional relationship existed, it was possible to go to the second stage of the language which describes what actually happens.

Lovitt (1967) followed Lindsley's design and furthered his description of diagnosis. He proposed that both the referred individual and the referring agent be included in the diagnostic procedure. His analysis of the environmental situation included evaluation of the proper reinforcers for the individual who may be operating at a level not presently under the control of the teacher. The teacher, in turn, was given the chance to choose which behaviors were of concern and was involved in the development of the remedial program. This allowed the teacher to develop the skills of analysis and remediation which increased the probability that the program would be carried out.

Edwards (1967) presented a proposal for a comparison study of Lindsley's diagnostic system and the more usual system. The results have not been reported but will be assessed in terms of their validity and utility.

Both task analysis and behavioral diagnosis tie together to become an effective way to determine an educational program for the retarded individual. If the most important task of diagnosis is to provide statements regarding what can be done to alleviate a problem, then this diagnostic system has no equal.

SUMMARY AND CONCLUSIONS

In evaluating the utility of each of the four diagnostic systems, there was no problem conceptualizing a justification for any of them. The differential diagnosis is important because most state laws require certain psychometric criterion as the basis for funding special education and rehabilitation programs. Etiological diagnosis can indicate whether

certain medical measures such as drugs and diet will be helpful to alleviate certain systems. The diagnostic-remedial system attempts to tie the information gleaned from psychological tests to the classroom. The behavioral-task analysis system indicates specific approaches to remediate deficits and to curb maladaptive behaviors.

If a diagnosis is used for the wrong purpose, it is useless. Every diagnostic system except the behavioral-task analysis has a lack of useful applicability to the school setting.

Engelmann (1967) tried to indicate that certain theoretical positions were inappropriate for education. He used the terms "overinclusiveness" and "irrelevance" to describe in what ways these positions were inadequate. An overinclusive diagnosis is so general that the teacher received no direction from a suggestion, and an irrelevant diagnosis provides suggestions over which the teacher has no control. An example of an overinclusive suggestion is a statement such as teach auditory vocal sequencing. Irrelevant statements include mental retardation, neurotic, and culturally deprived. In one case the teacher is led a step backwards from the specific tasks she is teaching, and in the other, there is a vague indication that change is impossible. If we evaluate diagnostic systems from the "overinclusiveness" "irrelevance" viewpoint, the only tenable position to take seems that of behavioral-task analysis. Suggestions from this system are specific, the teacher can manipulate them, and they are made in terms she can understand.

Dunn (1967) indicated that efficacy studies of special education have shown no positive effects accruing to the child on the basis of

special placement. However, through the utilization of task analysis in the schools, labeling of problems would be eliminated. The criterion for diagnosis would be in terms of what a child knows and what he doesn't know. From this information a special education program would become a truly individualized one, the child would not suffer from the adverse effects of labeling, and he would be able to resume regular class placement when he reached the level on the task ladder that indicated he was ready.

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	Differential Diagnosis	Etiological Diagnosis	Diagnostic-Remedial	Behavioral-Task Analysis
Rationale	Based on the AAMD definition and classification of mental retardation	1) Based on the AAMD Medical Diagnostic classifications; 2) Medical model that indicates we must know the cause of problem, mental retardation, in order to cure	1) Based on idea that diagnosis and remediation should be tied together; 2) Certain psychological abilities underlying the behavioral defects evidence by the retarded	1) Based on Bijou's and Lindsley's definition of mental retardation; 2) Views individual in terms of observed behavioral assets and liabilities
Definition	Determines whether an individual fits the criteria of AAMD definition	Determines why individual is retarded	Determines the underlying psychological correlates of the behavioral deficits evidenced by the retarded	Determines how individual behaves; what skills he has; and what controls the emission of those skills
Method	Statistical approach tests administered by a psychologist, both intellectual and adaptive behavior. Individual must be -1 standard deviation on both intellectual and adaptive behavior	1) Medical diagnosis can include physical examination, neurological, psychiatric, and genetic; 2) Psychological diagnosis can include personality tests, family history, and motor dysfunction	1) Tests administered by a psychologist to determine underlying ability structure. These would include IQ, language (ITPA) and perceptual (Frostig and Wepman); 2) Determine the highs and lows on the tests; plan remediation according to test profiles	1) A funtbnal analysis of the varied situations in which a perm interacts; 2) Determines the stimuli, responses, and reinforcers in the situation; 3) Allows the diagnostician to break down the dficit skills into task laddrs and train the individual in their areas
Assets	In order to receive aid in most state programs an individual must be classified as retarded	Determine whether drugs, prosthetics (glasses, hearing aid) or physical therapy is needed	1) Ties testing in with remedial techniques; 2) Gives teacher or other rehabilitation person some aid in planning program	1) Focuses on what can be done in retraining and rehabilitation; 2) Produces specific suggestion that can be implemented
Liabilities	1) Diagnosis can result in just pigeon holing; 2) Doesn't indicate how to rehabilitate	Only necessary in a small percentage of cases--approximately 85% of individuals diagnosed as retarded due to unknown or psychological causes	There is no experimental evidence to show such basic skill training helps in other areas	Diagnosticians must have training in operant techniques

	Differential Diagnosis	Etiological Diagnosis	Diagnostic - Remedial	Behavioral - Task Analysis
Tools	1) IQ Tests - Binet, WISC WAIS 2) Adaptive Behavior - Vineland	1) Family history 2) Developmental history 3) Neurological exam 4) Medical - endocrinological gene trace, urine analysis 5) Psychiatric exam 6) Projective testing - Rorschach, T.A.T.	1) IQ tests usually WISC 2) Language development - Illinois Test of Psycholoy - inquire abilities 3) Perceptual development - Frostig, Beery-Buknetica 4) Auditory Disc. - Wepman	1) Criterion Tests - Roswell-Chell Phonics Survey, Valett Devel. Tasks, Bushwell-Johns Arithmetic 2) Functional Analysis of Environmet - determining the disposition, stimulus, response, contingency, arrangement
Referral Procedures	1) Clinical Psychology 2) School Psychologist 3) Child Guidance Clinic	Usually hospital related-Children's Hospital in L.A.; U of O Medical Center	1) School Psychologist 2) Diagnosticiam - remedial teacher 3) Psychometrist	Anyone trained in functional analysis, precision teaching
Time and Cost	(+) doesn't take long; not expensive	(-) long period; expensive	(0) can be expensive	Indeterminant
Training Needed	1) Administration of psychology tests 2) Courses in diagnosis of M.R. 3) Usually Masters degree or Ph.D.	1) Medical School 2) Psychiatric residence 3) Ph.D. in clinical psychology 4) Medical specialty training	1) Usually an M.S. or Ph.D. 2) Can be a teacher with training in testing and remediation	1) In behavioral diagnosis 2) Knowledgeof operant theory ami application